"... keeps costs down ... frees men for other work ... speeds handling ..." say FARQUHAR CONVEYOR users

SATISFIED users report remarkable savings after they have "Conveyorized" their handling operations with Farquhar. Here are just a few examples:

At a New York pier, nine men formerly were needed to unload fresh vegetables. With Farquhar Freight Conveyors on the job, seven of the nine were freed for other work ... handling costs were cut 50% ... *delivery speed went up 100%.*

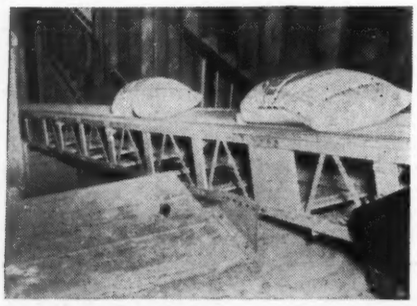
A large paper mill installed a series of eight Model 346 Farquhar Conveyors at a cost of $15,000 to speed up handling of coal from cars to pulverizing plant ... and now saves between $25,000 and $30,000 yearly on trucking charges alone.

A merchant reports his Farquhar Freight Conveyor delivers crates *faster* from trucks to a second floor cleaning room at half the cost of an elevator—and handles twice as many crates.

Hundreds of similar stories from laundries, food processors, grain and feed mills, chemical and paper plants, contractors, warehouses, echo *more man-hours saved ... handling speeded up ... over-all costs reduced* with Farquhar Conveyors.

Whether you stack, pile, load, unload, or move materials from floor to floor ... whether it's bags, bales, boxes, cartons, bundles, any kind of packaged or bulk materials—Farquhar has the right materials handling conveyor to do your job *faster, better, cheaper.* Tell us your handling problem; we'll give you the information you need.

Write for information to A. B. Farquhar Co., *Conveyor Division,* 205 Duke St., York, Pa., or 628 W. Elm St., Chicago 10, Ill.



CUTS MAN-HOURS FROM 32 TO 4 *with Model 431 Farquhar Freight Conveyor (54 feet long, 18 in. belt) unloading cars in hay, grain and feed warehouse. Operation that previously took 4 men one day, now takes one man ½ day, with Farquhar Conveyor help.*

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PORTABLE OR PERMANENT MATERIALS HANDLING
CONVEYORS

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ticle size varying from less than 0.5 microns in vapor form just above the cup to about 5 microns on ceiling and wall plates in the test room. It was stated that the volatilizer performed excellently in atmospheres normally difficult to control because of grease and steam, and was very successful against the common fly, *Eusca domestica.*

—End—

Dairy Refrigeration

(*Continued from page* 81)

for this has been the introduction of the plate type heat exchanger or cooling equipment. This equipment is very efficient on heat transfer and has enabled plants to make very good use of well or city water. The equipment is quite flexible, in that the capacity can be changed easily by the introduction of only a few plates. From a dairyman's viewpoint, sweet water is definitely coming to the front, and most plants today are being designed for its use, particularly in combination with some sort of latent heat equipment.

Latent Heat Plant

The thermograph chart, Fig. 2, which plots the refrigeration requirements for cooling milk throughout the day, shows that the big tonnage falls during a reasonably small number of hours. This has caused extremely high power demands that have given the industry high operating costs. Now that management has become more conscious of the importance of power demands, there is tremendous interest in some storage of latent heat.

It is true that in ice storage tanks we have to use a somewhat lower back pressure and thereby sacrifice a bit of efficiency in hp. per ton of refrigeration, as compared to operating directly on sweet water or direct expansion. But these slight disadvantages are overcome by the great flexibility of the latent heat system. Refrigeration loads in a milk plant are so sporadic and so irregular that it is difficult to plan an even load, and the ice storage equipment fits in beautifully under these conditions.

In many of our small cities and rural communities electric power is at a premium, particularly on demand charges. It is not at all uncommon to find demand charges running as high in dollar value for a month as the total energy charge. This has caused the dairymen to carefully scrutinize the refrigeration setup to see what could be done to reduce demand charges. In many

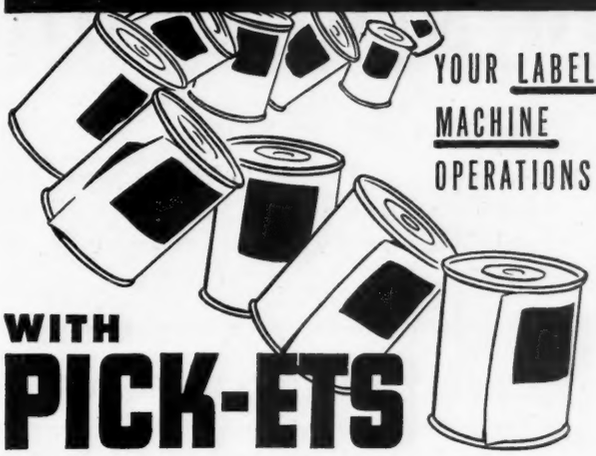
cases it has been found possible to reduce the direct connected power load in the engine room to less than one-half of the amount normally used, by the introduction of a suitable latent heat plant, Fig. 3. This consists of ice storage equipment to handle the raw milk and byproduct cooling loads, with an automatic compressor running during a period of approximately 12 to 14 hours on night operation. The balance of the cooling load, approximately 35 to 40 percent, is handled on the day load simultaneously with the processing of the milk. This can be done by running the compressor on the ice storage tank during the day or, in certain cases, by using it on separate sweet water cooling equipment where the back pressure can be somewhat higher.

Milk Storage Rooms

In all dairy plants, bottled milk, bulk milk, cream and byproducts, are maintained in what is called a 40 deg. room. Many times this is a misnomer and it is nearer to 50 or 60 deg. F. Such rooms should be maintained at approximately 35 to 38 deg. F. for best results. It is altogether too common to find them tied in with the main refrigeration system of the plant. When processing is finished and the crew goes home, the ice machines are shut down and the temperature of the rooms rises considerably. Many plants are now putting in small automatic compressors to keep the cooler rooms at a constant temperature throughout the entire day and night. The tonnage required for such rooms is small and the use of a separate compressor is to be recommended.

In many dairy plants an effort is made to keep milk storage rooms extremely cold, say 33 deg. F. This is done in an attempt to give a milk which is much colder than would normally be encountered and which can be delivered to the housewife in a very cold state. If we stop to analyze the problem, we can readily see that this is usually a waste of money. The milk is improved very little by such low temperatures in the ice box. Under average summer conditions outside temperatures are around 95 deg. F. and the water temperatures are usually 75 to 80 deg. F. This means that the bottles coming off the washer, and the milk cases as well, are rather warm. In many instances they are as warm as 110 deg. F., particularly the cases which cool slowly once they have been heated in passing through the case washer. When 38 deg. F. milk is filled into warm bottles its temperature will usually increase to approxi-

SPEED-UP!



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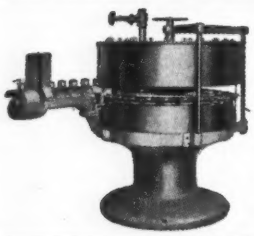
For tomatoes, cut stringless beans, quartered and halved apples, berries, beets, plums, olives, whole apricots and similar products. Delivers a full and even fill.

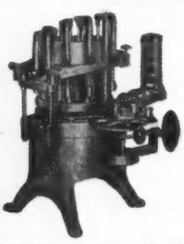
CRCO FRUIT & VEGETABLE FILLER

For whole tomatoes, all sliced or cut vegetables, fruits and almost every type of granular product. Insures exceptionally high quality fill. For tin or glass.



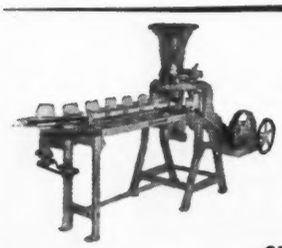
CRCO-AYARS LIQUID FILLER

For high-speed filling of all types of fruit and vegetable juices, light soups, liquids, light syrups and other free-flowing products. Capacities in excess of 250 cans per minute.



CRCO-AYARS PLUNGER FILLER

For pumpkin, apple sauce, tomato or vegetable soups, cranberry sauce, strained baby foods, cream corn and other products not larger than ⅜" diameter and which contain not less than 20% moisture when hot.



CRCO FROZEN FOOD FILLERS

CRCO-Ayars (illustrated) for 12, 16, 40 and 80-ounce side-opening cartons handles peas, limas, cut corn, cut stringless beans and other vegetables and fruits. The CRCO 600-C will handle the rigid, end-opening cartons.

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THE BEST OF Everything

CHISHOLM-RYDER CO. INC.

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Chisholm-Ryder Company of Pennsylvania — AN AFFILIATE

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(179)

mately 48 deg. F. and even higher after it has been in the ice-box for a few moments. In the ice box the cases are stacked in large piles with cold air sweeping around them. One might think that this would cool the milk quickly. If we use a thermometer, however, and check the cases several hours later it will be noted that there has been very little cooling and that what cooling there has been is only around the edges and some of the top cases. In the center of the stacks the bottles are as warm as they were when they went in and the milk actually goes to the trucks at approximately 50 deg. F. In other words, it is rather foolish to try to maintain a room at 33 deg. F. when we have no real hope of cooling the milk much below 50 deg. F.

—End—

Microbiological Control

(*Continued from page* 77)

of preservation to the holding of other fruits for subsequent freezing.

Suggestion for Fish

It is well-known that the deterioration of fish products takes place almost entirely prior to the time that this type of food reaches the processing plant. This spoilage, when evident, is largely ascribable to bacterial action. The bacterial action is facilitated by the manner in which fish are handled aboard the boats. There are means of preventing deterioration in this case by developing methods that will prevent the growth of microorganisms on and in the raw product.

Some of the possibilities for research are:

1. Methods of disinfection to be used aboard boats.
2. New procedures for storing fish in pens.
3. The use of ice that contains bactericidal agents.
4. Improved methods of unloading the catch in port.

Improving Poultry

Poultry is another product that may deteriorate through bacterial action prior to freezing. Methods of handling dressed poultry to the point of evisceration have been fairly well perfected, and the newer practice of "hot evisceration" helps eliminate the undesirable changes in flavor. For those who are not using more recent methods and for those who freeze poultry in the "New York dressed" form, it may be said that the utmost effort should be made to lower the internal temperature of the

product to near the freezing point as soon as possible after the dressing has been completed. Care should be taken to maintain such temperatures in the product, once they have been reached.

Raw Product Research

From the standpoint of all products, it is evident that there is a considerable field for research regarding the maintenance of quality in raw products prior to freezing. This research cannot be done by the microbiologist alone. The chemist, the sanitation experts, and even the engineer must work with the microbiologist to improve the quality of the material that you bring to your plants to be frozen.

One other phase of research and technical control, which requires more attention than it has received to date, is the removal of spray residues. Tolerances have long been in effect for arsenicals and lead, but the wide usage of DDT in agricultural areas represents a problem which cannot be disregarded lightly by food processors, including those who freeze foods.

Electronic Blanching

Another possible field of research which has some most interesting potentialities is the use of electronics in blanching fruits and vegetables before freezing. Recent experiments in the M. I. T. Food Technology Laboratories have indicated that exposure of fresh vegetables to radar irradiation at 3,000 megacycles for a period of 30 seconds or less can reduce microorganisms to a minimum, with practically no reduction in the vitamin C content of the vegetables and with the simultaneous inactivation of enzymes, which is most essential.

When the raw material is placed in a practically sealed container before the radar treatment, with only a small orifice for the steam (which is instantly produced) to escape, all the juices are retained. If the container is immediately sealed after exposure to radar irradiation, the blanched product can then be cooled and frozen immediately, either by air-blast, immersion, or conduction freezing, without the usual leaching of food components experienced in steam or hot water blanching.

X-Rays and Cathode Rays

This type of blanching by radar treatment is not yet on a large production line basis, but it deserves serious consideration and further research, for some products. One to which it appears particularly applicable is corn on the cob, which has its own problems.

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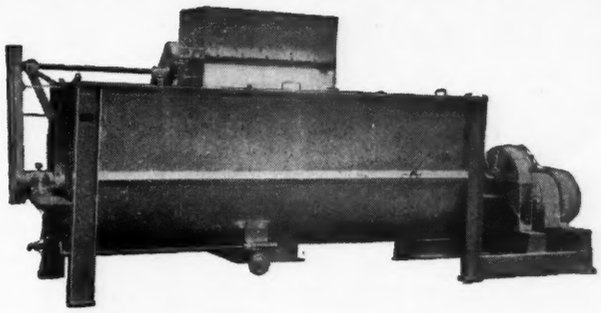
SIFTER and MIXER...*Two in One!*



Capacities from 1 to 234 cu. ft. per charge. Agitator design relieves end-load strain on outboard roller bearings. Inlet and discharge gates centrally located. Flush-fitted or sealed covers. Packing glands conveniently situated on Mixer body. Designed by experienced engineers and built to specifications. Robinson Equipment is available for all processing requirements . . . mixing, grinding, sifting, crushing, blending, etc. Inquiries invited!

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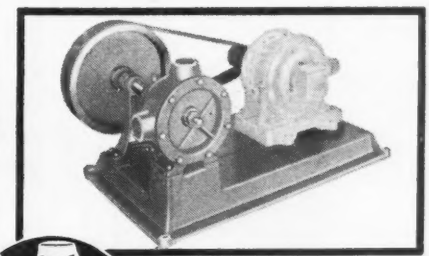

Substitutes ...OUT!

The substitute era of war-time shortages is drawing to a close. Once again Viking, the pump built *for* your job, is becoming more readily available.

A few are still on the shortage list. However, every effort is being made to vastly increase production of these models. The result is progressively earlier schedules.

Production is up—away up—higher than at any time in the company's record. But please don't forget, quality, at no time, has been sacrificed for higher production.

Buy Viking with assurance of the same dependable "gear within a gear" quality. First in the rotary pump field. Write today for free bulletin 100E.

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Viking PUMP COMPANY Cedar Falls, Iowa

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IT SUSPENDS . . .
IT GELS . . .
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We are now producing from Carragheen two new improved types of gelose. One of them should be the answer to your emulsifying, suspending, thickening or stabilizing problems.

KRIM-KO GEL is an all-purpose colloid-assistant. Properly used, it has been proved effective in many of the most exacting food, pharmaceutical and industrial applications.

CARRAGAR is an agar-type gelatin which forms tender, fruit-like gels over a wide pH range. It does not require acidulation to produce desired results.

Send for free liberal working samples for experimental use.

YOU CAN SAVE TIME AND MONEY WITH
THOMSEN
DIRECT DRIVE
SANITARY PUMPS
4 IMPORTANT FEATURES:
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• new, simplified head
• no coupling; no bracket
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Designed especially to meet the needs of dairies, beverage plants, food processors, creameries, ice cream plants, etc.
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Valves, Line Filters, Tubing, Etc.
Your assurance of quality and sanitary design is backed by our 45 years of experience.
Free catalog, specifications, price lists, special equipment quotations on request. Ask your jobber or write L. C. THOMSEN & SONS, INC., DEPT. D., KENOSHA, WISCONSIN.
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SANITARY EQUIPMENT
FOR
THE PROCESSING INDUSTRIES

Another field of food research in electronics, in which some of our associates have been pioneering at M. I. T., relates to the use of x-rays and cathode rays as means of killing such microorganisms and inactivating enzymes in foods without the use of heat. Such research may eventually benefit the food processing industries, including those that are freezing foods, but the application of such methods in mass production is not to be expected without extended periods of research and development and the expenditure of much money, time and human effort.

—End—

Knowledge in Research

(*Continued from page* 113)

pies prepared from the same lot of apples while fresh, and there was no suggestion of "dried apple" flavor. Experiments indicate that when the original apples lack tartness, the final product can be improved in flavor by incorporating a small amount of citric acid in the water used for rehydration. Thus, it may be possible to utilize surplus apples of varieties grown principally for the fresh fruit trade and usually regarded as unsuitable for pies.

Bacteria in Orange Juice

Oranges spoiled by the condition known as soft rot may be responsible for bacterial contamination in frozen orange juice. Bacteria may be held relatively inactive by the acidity of the juice, but can grow and multiply in the elbows and connections of the processing line to eventually find their way in large numbers into the juice.

Studies carried on at the Western Regional Research Laboratory emphasize the critical importance of careful selection and washing of fruit for processing. Scrupulous sanitation is also needed in the plant if bacteria counts are to be kept at a low level.

Orange juice that is frozen without preliminary sterilization may contain many kinds of microorganisms. Further work will be done to learn the numbers and kinds of bacteria to be expected under various conditions and how to make routine examinations of the product.

Improved Citrus Products

Preparation of a standardized juice from western grapefruit by adjusting the sugar-acid ratio with cane sugar and sodium bicarbonate is being studied by the Fruit and Vegetable Chemistry Laboratory at Los Angeles.

Navel oranges are not ordinarily used for processing, but experiments with a frozen Navel orange puree have been so successful that a new field may be opened to provide a greater utilization of this fruit. The frozen puree could be prepared during a season of the year when other fruits are not available for freezing.

Grape fruit segments heat-treated with a varying amount of calcium chloride added as a firming agent (to form calcium pectate) have been effectively firmed and prevented from becoming mushy when heated.

Frozen packs of grapefruit and Navel orange segments in equal parts were successfully prepared in the Laboratory during the past year. The product was quite tasty and had attractive eye-appeal.

Cucumber Pickling

Hollow pickles or "bloaters" can be formed by the gas evolution resulting from brine fermentation. Continuing its investigation on this problem, the food fermentation section of the Agricultural Chemical Research Division cooperated with the North Carolina Agricultural Experiment Station at Raleigh. Cultures of yeast were obtained from commercial cucumber fermentations and over three hundred strains of yeast were isolated and classified. Some of these yeasts can ferment cucumber sugars and cause rapid evolution of gas in brines of relatively high salt concentrations. They are especially likely to contribute to serious losses if salt concentrations greater than 15 percent are employed. The higher salt concentrations interfere with lactic acid fermentation but favor gaseous yeast fermentation.

Frozen Foods

Blanching of sweet corn on the cob, prior to cutting off the kernels for freezing, results in a higher yield and a more palatable product. Such a process, as demonstrated by the Western Regional Research Laboratory, will give a 20 percent greater yield with 5 percent more sugar content compared with corn cut from the cob before blanching.

Frozen fruits may be safely packed in hermetically sealed containers without fear of *Cl. botulinum* poison development according to preliminary investigations. If this finding is adequately confirmed, it may revolutionize the packaging procedures for frozen foods. Greater ease of handling and lower labor costs from the mechanization of the packaging procedure would be some of the advantages realized.

The process of using a dipping bath containing sodium sulfite, salt,

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CM overhead materials handling units are designed to increase plant output and lower production costs by mechanizing and speeding the movement of materials. If you are improving or expanding your plant, it will pay you to check up on CM industrial hoists. Three of the most popular units in the CM line are...

The CYCLONE Model M High speed heavy duty hand hoist. 96% efficient. 1 ton capacity weighs only 35 pounds. Sealed in lifetime lubrication. Capacities from ¼ ton up.

The COMET Portable, speedy, sturdy electric hoist. One-hand control. For plug in on 110, 220 or 440 volts. Capacities from ⅛ to 1 ton.

The METEOR Fast, heavy duty electric hoist. Airplane type cooling. Push button control. Single or two speed. Capacities from ½ ton up.

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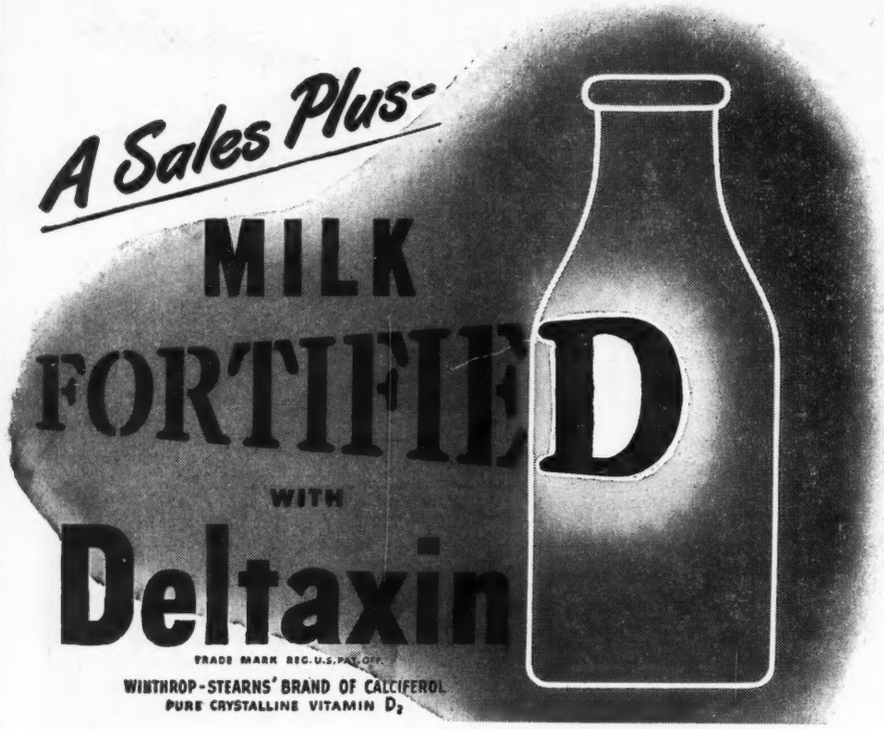

Deltaxin, Winthrop-Stearns' brand of calciferol is pure crystalline vitamin D_2 with unvarying antirachitic potency. These crystals are dissolved in propylene glycol which mixes readily with milk and disperses uniformly even without homogenization.

Deltaxin in propylene glycol offers you these advantages:

PURITY . . . . . Deltaxin is the purest known form of vitamin D_2

ECONOMY . . . . . Costs less than one cent per 100 quarts of milk

CONVENIENCE . . . Simply measure and add, or use standardized container for batches of 1,000 gallons

ACCURACY . . . . . Tests made with regular milk (not homogenized) show complete dispersion throughout cream and skim layers.

The Council on Foods and Nutrition of the American Medical Association has declared Deltaxin in propylene glycol suitable for the fortification of Council accepted vitamin D milk.

Deltaxin is available as crystals or in oil solution for the fortification of other food products.

Winthrop-Stearns supplies pure crystalline vitamins, enrichment mixtures and amino acids to leading manufacturers throughout the Food Industry.

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Keep your equipment sanitary with Roccal*, Winthrop-Stearn's powerful sanitizing agent . . . non-poisonous, tasteless, odorless.

and ascorbic acid to prevent the oxidative browning in frozen fruits is being further investigated and adapted to various fruits.

Sugar Beet Storage

Sugar loss in sugar beets stored in open piles can be prevented. Recent plant scale trials of outside storage procedures by the Agricultural Chemical Research Division, in cooperation with the Bureau of Plant Industry, Soils, and Agricultural Engineering, made comparisons between ordinary piles of beets and piles provided with ventilating channels into which night air was blown. (See Food News picture in March 1948 Issue of FOOD INDUSTRIES.)

In nine cases out of ten, the sugar recoveries indicated that forced ventilation prevented one-third to two-thirds of the sugar loss shown by the control piles.

From basic studies it has been learned that the best storage temperature is about 35 deg. F. Addition of carbon dioxide to the storage atmosphere reduces the sugar loss, but not as effectively as cooling. Beets dried to the extent of losing 10 percent in weight before storage are very susceptible to spoilage. High-topped beets lose sugar more rapidly from respiration, but are more resistant than low-topped beets to spoilage organisms.

Peanut Protein

There is a fast-growing interest in the production of peanut-protein fiber for apparel fabrics. At least three companies have formulated plans to engage in one or more of the operations required to obtain synthetic fiber from shelled peanuts. These operations include the removal of the coloring matter in the skins prior to processing, or removal of the skins, processing by solvent extraction to obtain a meal of low oil content, separation of a purified protein from the meal, and spinning of synthetic fibers from the protein by wet processes similar to those employed in the viscose-rayon industry.

Research in the Southern Regional Laboratory points to the possibility of using peanut protein in the manufacture of industrial products other than fibers. For example, a process has been developed for modifying peanut protein to make it suitable for use in papercoating compositions. Preliminary tests have indicated peanut protein to have adhesive properties superior to some proteins now employed in the papercoating mixtures. A cold water paint utilizing the adhesive qualities of peanut protein has been produced experimentally.

Margarines

(*Continued from page* 112)

while that of those held at 28 deg. F. was only "fair".

(d) Definite indications of deterioration in quality were apparent in the samples stored at 45 deg. F. for 240 days (Table V). These samples were not considered marketable. Sample made according to Formula A, which included neutral lard, extra oleo oil, hydrogenated pork fat and hydrogenated soya oil, had developed a grainy texture. All other samples had smooth textures, including those with "fair" to "poor" flavor.

(e) Penetration tests were not made on the samples stored at 5 and 45 deg. F. when the investigation was concluded at the end of the 538-day period (Table VI). The flavors of those stored at −10 and at 5 deg. F. were considered to be "very good". Samples stored at 45 deg. F. were decomposed and those stored at 28 deg. F. were not considered marketable.

(f) All samples were readily workable and no salting out was apparent at the end of 538 days storage.

—End—

Mold Enzymes

(*Continued from page* 84)

chain over the bin. The chain belt carries the empty trays over revolving circular brushes where they are cleaned. The trays later travel through an oven which sterilizes them at 300 deg. F. for 3 min. The trays are then automatically inverted and carried under the vibrating loader which fills them with inoculated subtrate.

At the same time the trays are being cleaned, sterilized and filled with new culture material, the empty trucks travel back to the loading point, parallel with the moving tray line.

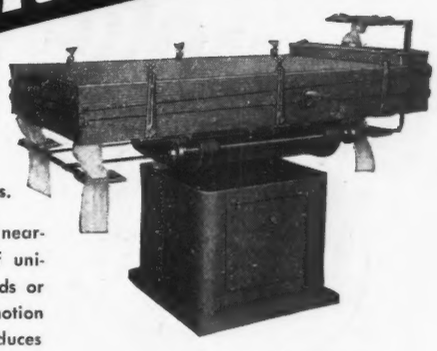
A screw conveyor carries the dry culture material from the discharge bin to the grinder and bagger, or to the extraction department.

New Possibilities

Culturing molds and bacteria on a solid substrate offers new possibilities and products not possible in a liquid culture medium. It has been assumed that the extraction of a solid culture would include undesirable substances. Recently, however, it has been shown that undesirable extracts could be eliminated by selecting the proper substrate. For example, it has been shown that an inert substance like

Schutz O'Neill

GYRATOR SIFTER



For sifting SPICES, DRUGS, HERBS, CHEMICALS, and hundreds of other ground materials.

A Schutz-O'Neill Gyrator Sifter delivers a near-perfect separation and a large volume of uniform product free from tailings, fibre, shreds or foreign particles. The continuous whirling motion of the material on the sieve's surface produces this clean separation.

Built with one to three sieve frames, the Gyrator Sifter will deliver up to four grades of product. Sieve meshes are kept free from clogging, are quickly removable, and can be thoroughly cleaned in a few minutes for grinding a different product. Very light running—requires only 1 to 2 H. P. motor.

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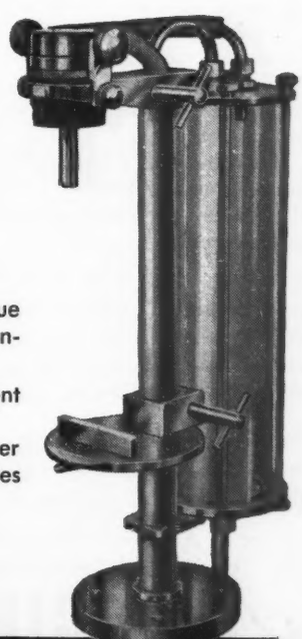

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porcelain beads could be used with a coating of a nutrient medium. This method might be used also for producing various enzymes, anti-biotics, acids and even fats.

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—End—

Gas Packaging Peanuts

(*Continued from page* 73)

amount of oil lost for each cook.

Peanuts are cooked in oil kept at 350 deg. F. Blanched Virginia peanuts are cooked 8½ to 10 min. Spanish peanuts (in the redskin), on the other hand, are cooked longer—18 to 20 min. After the peanuts have been cooked, the basket is raised and the peanuts are drained of excess oil for about one minute.

From the cooker, the basket of hot peanuts is carried to a cooling box. Here, the peanuts are evacuated for 15 to 20 min. Any oil blown from the peanuts during the cooling operation is trapped in a specially constructed tank with a series of baffles. About 2½ gal. of oil is trapped for every five cooks. Not only does the oil trap save oil, but it also prevents the oil from accumulating on outside surfaces of the building.

From the cooler, the peanuts are dumped into a salting drum. About 4 lb. of fine grain salt is added to 250 lb. of peanuts. Salt is mixed with the peanuts by rotating the drum for about one minute. The salted nuts are then dumped into a filling hopper.

Nitrogen Packing

At the filling station, a Flex-Vac bag, made of thin gage aluminum foil laminated to Cellophane and bleached kraft paper, is hand formed over a wooden mandrel. A corrugated carton is placed over the bag. Both bag and carton are then removed from the mandrel.

Peanuts are filled into the bag and weighed to a net weight of 30 lb. The top of the bag is then shaped

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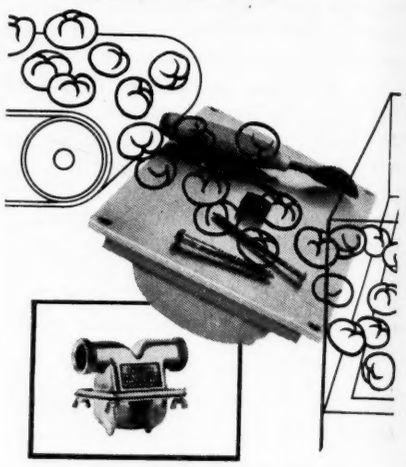

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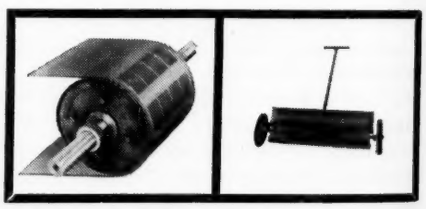

Cesco Magnetic Pulley—a permanent magnetic separator for the removal of tramp iron from belt conveyed products.

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F-2

for heat-sealing and the carton flaps are held in position on the side of the carton by a wooden or metal frame. The package is now ready for vacuum- and nitrogen-packing.

Operation

The package is inserted in a Standard Cap & Seal Corp. vacuum chamber, with the top of the bag inserted between heat-sealing bars. After the vacuum chamber and the relief valve are closed, the vacuum valve is opened. A 2 hp. vacuum pump draws about 28½ in. of vacuum in the chamber. The vacuum valve is closed and the nitrogen valve opens automatically. Nitrogen then enters the chamber under 40 lb. pressure. When about 5 in. of vacuum remains in the chamber, the flow of nitrogen is automatically cut off.

The bag is then heat-sealed at 315 deg. F. Vacuum is cut off from the chamber by opening the relief valve. The chamber is opened and the carton is removed. The carton flaps are closed and the carton is then taped.

Future Plans

At present the following peanuts are nitrogen-packed: (1) No. 1 Spanish, salted in the redskin; (2) jumbo (extra large) Virginias, blanched and salted; (3) jumbo Virginias, salted in the redskin; (4) medium Virginias, blanched and salted and (5) medium Virginiass, salted in the redskin.

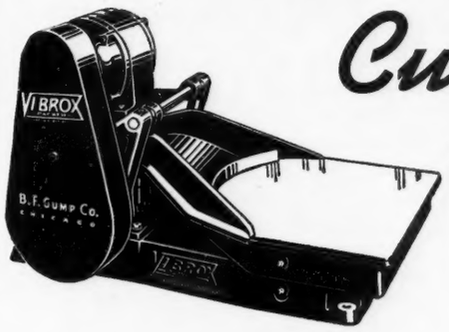
The present vacuum packaging machines turn out one 30 lb. package every 45 sec. New machines are being designed to produce two packages a minute. When these new machines are constructed, Farmers Nut Corp. plans to redesign the entire plant so that roasting, blanching, cooking, cooling, salting and packaging will be done in a continuous operation.

Retail Packages

Experiments are underway to develop a $0.05 and $0.10 retail nitrogen-packed bag. Peanuts will be packaged in transparent bags, made of Pliofilm laminated to Cellophane. Tests have proven that peanuts maintain their roaster-cooker freshness when nitrogen-packed in these smaller units. High-speed packaging machines, however, must be developed before these retail packages can be produced on a commercial basis.

Farmers Nut Corp. also plans to package mixed nuts and roasted peanuts in the shell in bulk and retail units.

Vibrox Packers Cut Packing Costs



The smooth, continuous, vibrating-rocking motion of Vibrox Packers quickly packs and settles dry flaked, granular, or powdered materials. As a result, smaller containers can generally be used for a given weight of material. Besides cutting container costs, labor costs can be reduced substantially. This combined savings frequently repays the cost of a Vibrox Packer in 60 to 90 days.

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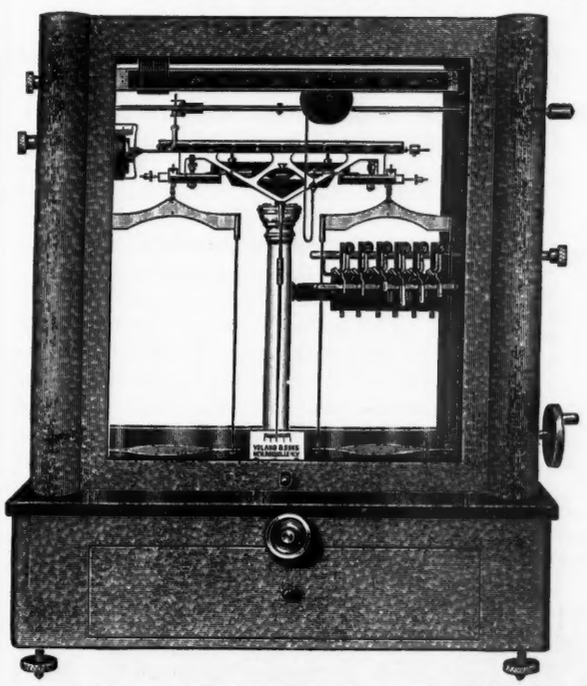

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Filtration Pads

(*Continued from page* 75)

is controlled by the surface area of the pads. In addition, the degree of filtration is controlled by the density of the pads.

The removal of impurities and other undesirable matter by asbestos filter pads is accomplished in two ways. First, finely suspended matter is mechanically screened because of the latticed structure of the pads. Second, these solids are absorbed by certain types of asbestos fiber.

The primary factor responsible for removing colloidal particles, dispersed impurities, yeast spores and bacteria from liquids is the surface active or adsorptive property of asbestos fibers. This property has been repeatedly demonstrated by filtering liquids with solid matter through filter paper and asbestos filter pads and comparing the clarity of the filtrates. Despite the fact that both filtering media offer the same resistance to liquid flow, the filtrate from the asbestos pad is more brilliant or "polished."

How Pads Are Made

In making filter pads, present day practice is to use a mixture of asbestos fiber and paper, which is done for several reasons.

Paper fibers are incorporated in manufacturing asbestos pads because pure asbestos pads are impractical. Asbestos fibers suitable for filtration have little wet strength, depth filtration is sacrificed and pure asbestos pads are too costly.

The adsorptive effect, obviously, will have a definite relationship to the asbestos-paper ratio. As the asbestos to paper ratio is increased, the degree of particle retention is also increased. Therefore, two factors are important in the manufacture of asbestos filter pads: (1) Dispersion of the asbestos fibers and (2) the method of making the pads.

The pads are made commercially by adding high alpha paper fiber to carefully selected and processed asbestos fiber. Where small amounts of soluble calcium and iron compounds are undesirable in certain applications, these compounds are removed by washing the asbestos with acid. The paper-asbestos mixture is mixed with pure water and beaten to a definite, uniform consistency. The resultant slurry is then fed into molds similar to those used to make high quality hand felted paper. While in the mold, excess water is slowly drained and the pad is formed.

At this point, the successive layers

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of gradually increasing density are formed, making possible depth filtration. Rigid control of the rate of molding under partial vacuum is essential to form the pad. This is done so that the discharge side of the pad is firmly compacted, while the inlet side or face is less dense.

An additional refinement consists of making the inlet side of the pad slightly rough. In so doing, the exposed area is greater than the projected area of the pad.

After molding, the wet pad is transferred to a belt drier where excess moisture is driven off. About 750 lb. of water vapor are removed for every 1,000 pads of average size.

Next, the dry pad is die cut to fit the filter press. The drying operation must be controlled to eliminate the retention of any abnormal amount of moisture by the pads. This moisture evaporates, causing the pads to shrink and no longer fit the filter press.

After the pads are cut, they are inspected for uniformity, wrapped in units of 10 in glazed paper, sealed and packed in cartons of 100. The cartons are then stored in a dry room, ready for shipment.

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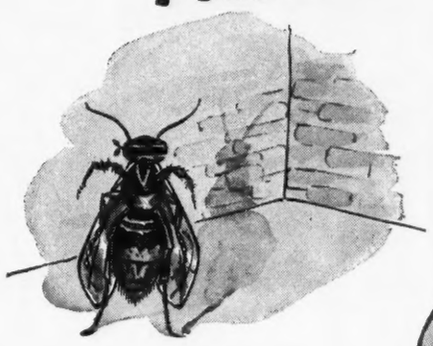

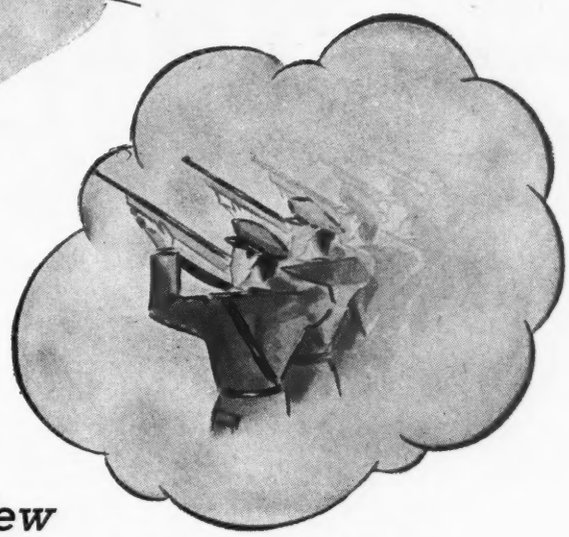

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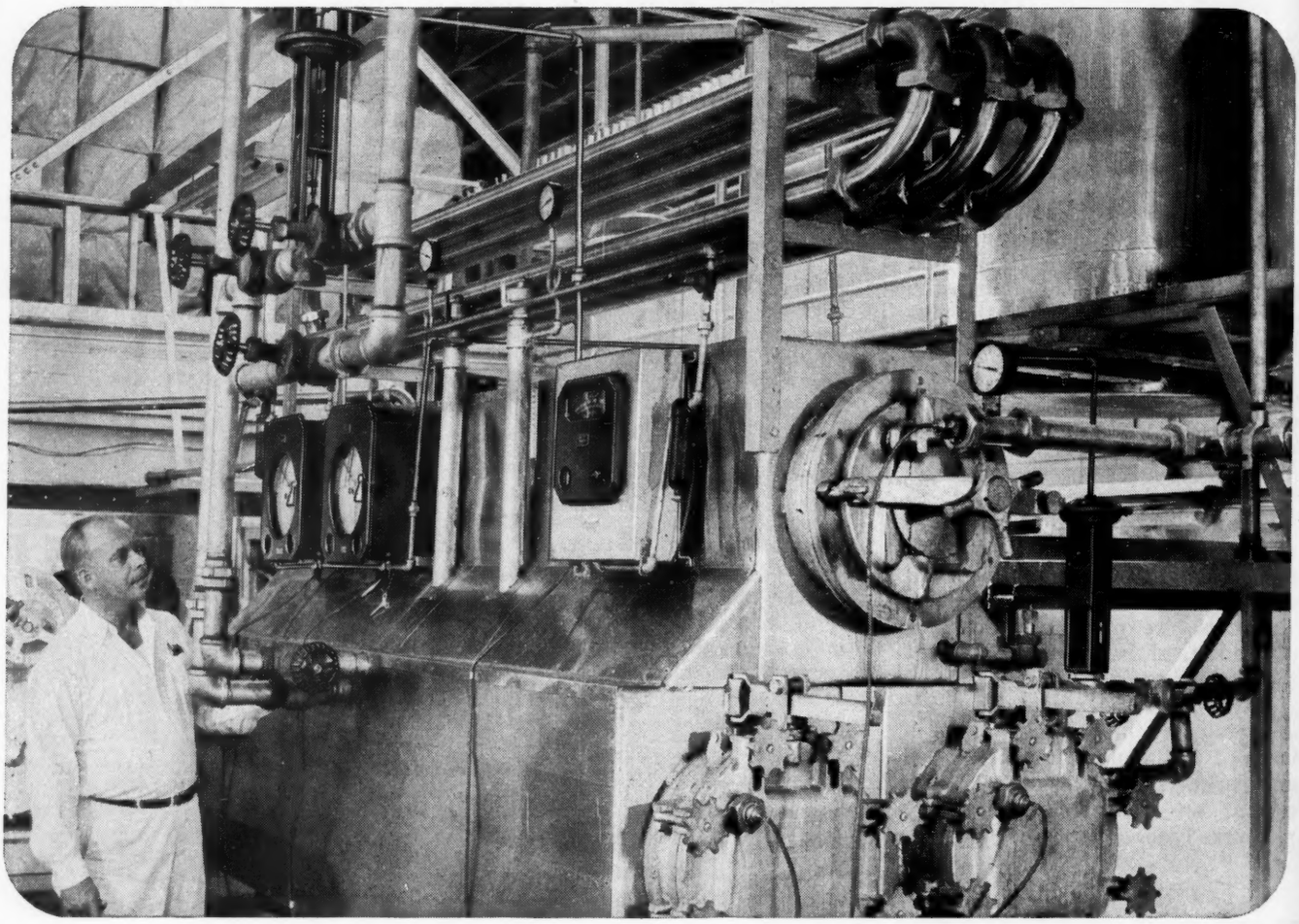

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